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The last half of a course in subject indexing for the Educational Resources Information Center (ERIC) system is presented in this volume. The demonstration of indexing techniques, lesson 3, uses a typical document (given in full in an appendix in volume 1) to show how indexing concepts are chosen in practice and converted into terms contained in the ERIC Thesaurus or into new terms to be considered for inclusion in the thesarus. The use of a form for help in selecting indexing terms is also discussed. In the final lesson, number 4, two more documents are presented (also given in full in volume 1) and the process of indexing each is considered. The first two lessons are presented in volume 2 (LI 000 815) and the appendices in volume 1 (LI 000 814). (CM)

INDEXING FOR ERIC

Vol. 3

INDEXING FOR ERIC

Lesson 3

DEMONSTRATION OF INDEXING

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

INDEXING FOR ERIC

Volume 3

Lessons 3 and 4

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Lesson 3
DEMONSTRATION OF INDEXING

Review

Before we attempt to index a research document, let us review the procedure discussed in the last lesson.

Concept Indexing. Recognition of the significant concepts in a document is called "concept indexing." It has nothing to do with the particular "index language" to be used.

What is your first step in concept indexing?

Looking for concepts in the body of the document. 4

Finding key words in the title of the document. 6

You have arrived at this page by mistake.

Return to page 1 and follow the page directions beside your answer choice.

After you have compiled the list of candidate terms, you feel that you must look up the terms in the ERIC Thesaurus (ERICT).

Right. The purpose of ERICT is to control the vocabulary of the indexer and the searcher.

Translation of Candidate Terms into Controlled Index Terms. After you have compiled your list of candidate terms, you must translate each term into the language of ERICT.

1. Is your term used as a descriptor in ERICT? If so, use it.
2. Does ERICT list your term but refer to a synonym? If so, use use ERICT"s preference.
3. Does ERICT combine two or more of your terms? If so, use the combined term.
4. Does ERICT indicate that you should use a related term or additional terms? If so, do it.

What happens if you can't find one of your candidate terms in ERICT?

That term must not be used. 10

You must recommend the term for inclusion in the thesaurus. 7

(from page 1)

You say that your first step in concept indexing would be to look for concepts in the body of the document.

That comes later. You should start with the title.

Please continue on 6.

(from page 6)

After you have compiled the list of candidate terms, you feel that you must discard the less important terms.

No. You should decide whether a concept is needed in the indexing before you list its candidate term.

Please continue on 3.

You say that your first step in concept indexing would be finding key words in the title of the document.

Yes. This is the most likely place for a description of what the document is all about. In the title you will usually find some of your key words — words that will stand (alone, or in combination with others) for a class of documents.

You can test a term by asking the question: "Have you any information on x ?"

For a document entitled "Reading Readiness — How to determine it." You could ask:

Have you any information on how?

Have you any information on reading?

Have you any information on readiness?

Have you anything on determine or determining?

Obviously, the first question is useless. In the others, the words substituted for "x" have meaning, either by themselves or with another term, such as "reading readiness" or "determining readiness." They are therefore possible keywords.

After you have compiled a list of all the candidate terms, what do you do with them?

Look up each term in the ERIC Thesaurus. 3

Discard the less important terms. 5

(from pages 3, 10)

Yes. If a concept is significant, and if there is no term for it in ERICT, you must make a recommendation for an addition.

The Office of Education has published a guide to the selection of terms with the title "Rules for thesaurus preparation." You will also find in use at your Clearing House a special form for justifying the term of your choice. The procedure for completing this will be explained by your supervisor.

We are now ready to look at the demonstration document, "The Use of 'Likability' Ratings and Ability Scores in the Prediction of School Achievement." (J. Robert Williams, The Journal of Educational Research, Vol. 57, No. 2: pp. 90-92; October, 1963) Please read this document carefully and then turn to 8.

(from page 7)

Demonstration document

When making your list of candidate terms you will find it an aid to clear thinking if you record them in columns which separate different categories. We show on this page a model including examples of terms for each category. You can try it out and modify it, if necessary. Once a satisfactory outline has been discovered, blanks can be duplicated for regular use at the Center.

The column for kind of document has been included, even though it is not really part of subject indexing, to give you some practice in distinguishing between form words and subject words.

1	2	3	4	5	6	7	8
Kind of Document	Educational Establishment (or part of)	Person Studied	Attributes or Actions (of terms in any column)	Curriculum	Teaching and Learning Methods and Administration	Testing, Evaluation Measurement	Agent or Means of Col.7
e.g.	e.g.	e.g.	e.g.	e.g.	e.g.	e.g.	e.g.
Educa. Experiment	School	Teacher	Attitudes	Math.	Lectures	Rating---	Teacher
	High School	Student	Objective	Physics	Television	Grading---	Objective test
Case Study	University	Doctor			Planning		
Survey	Classroom				Discipline	Comparing	
Educa-Research							

Make sure that you have a copy of this form ready and enter each candidate term as we proceed with the lesson.

Please refer to Appendix E of Volume 1 for sample of complete form for copying.

Please continue on 9.

(from page 8)

Before looking for subject words we must ask if the document as a whole needs a form description. We suggested in Lesson 2 that the major categories for ERIC documents are:

Experiments

Case studies

Surveys

Research review

To which category would you allocate this article?

Experiments	11
Case studies	15
Surveys	17
Research review	19
None of these	21

10
(from page 3)

If you can't find one of your candidate terms in ERICT, you think that it must not be used.

No. The most likely reason for a term's absence is that it has not previously been used for indexing. Part of your job as an ERIC indexer is to recommend new terms as required.

Please continue on 7.

(from page 9)

Yes. The section headed "Purpose and procedure" indicates that this article belongs to the category of Experiments.

We can now examine the title of the article for keywords.

The Use Of Likability Ratings And Ability Scores
In The Prediction of School Achievement

Which list of candidate terms would you select?

Likability, Ratings, Ability, Scores, Prediction of school achievement. 14

Likability ratings, Ability scores, School achievement, Achievement prediction. 12

Yes. Whenever you have very general terms, it is best to list them as candidates for pre-coordination.

1. Likability Ratings
2. Ability Scores
3. School Achievement
4. Achievement Prediction

They should be recorded on your form in the following manner (we are adding the form word in column 1):

1	4	5	6	7
Kind of Document	Attributes or Actions (of terms in any column)	Curriculum	Teaching and Learning Methods & Administration	Testing, Evaluation Measurement
Educ. Experiment	Likability			Ratings
	Ability			Scores
	School Achievement			
	Achievement			Prediction

Please turn to 13.

We can now begin looking for terms in the text.

> AN EARLIER article (4) reported the development of a method for obtaining teacher ratings of students on the trait of "likability" and presented results showing that these ratings were reasonably reliable and significantly correlated with both ability scores and grade-point averages in a sample of high-school seniors. On the basis of these findings and the known relationship of ability to achievement, the possibility of combining "likability" ratings and ability scores was suggested as a means of improving achievement prediction.
>
> In terms of the data from the preliminary study, the expectation that employing such a combination of measures offered better prediction than using either alone came from the fact that, whereas their separate correlations with grade-point averages were .550 and .668 respectively, their combined (multiple) correlation with this criterion was .728. The standard score form of the multiple regression or predictive formula in this instance, as developed previously, was
>
> $$z_1' = .307z_2 + .540z_3, \quad (1)$$
>
> where z_1', z_2, and z_3 represented grade point average, ability score, and "likability" rating, in that order, for any student.

In the first paragraph, which term denotes the genus of the species "likability"?

Ability	16
Achievement	18
Trait	20

(From page 11)

No. Although all the important words from the title are here, there is a better way of listing them.

We explained in Lesson 2 that pre-coordination is an advantage whenever a very general term is used. If you list such pre-coordinations as candidate terms, it will make for greater ease and efficiency in translation.

There are four very general terms in this title: Ratings, Scores, Prediction and School.

It is therefore better to list "Likability ratings" and "Ability scores" than to list the four words separately. In the list that you chose "Prediction" and "School" are combined in one phrase with "Achievement." On the whole, pre-coordination in ERIC should be limited to two terms, so it is better to break up this phrase into "School achievement" and "Achievement Prediction."

Please continue on 12.

(from page 9)

No. The following definition shows that the description "Case study" is not applicable to this article.

"The case study ... is an approach which views any social unit as a whole. Almost always, this means of approach includes the development of that unit which may be a person, a family or other social group ..."

Please return to 9 and choose another answer.

16
(from page 13)

You feel that the term "ability" is the genus of "likability."

No. Likability is normally thought of as a quality of a person, rather than an ability.

Please go back to 13 and select another answer.

(from page 9)

No. The following definition shows that the description "Surveys" does not apply to this article:

"The systematic collection of data from populations or samples of populations through the use of personal interviews or other data gathering devices."

Please return to 9 and choose another answer.

18
(from page 13)

You feel that the term "achievement" in the first paragraph is genus of the species "likability."

No. Likability is normally thought of as a quality of a person, rather than an achievement.

Please return to 13 and select another answer.

No. It is true that the first 2 paragraphs refer to previous research, but this is a common practice and does not warrant treating the document as a review of research in the subject.

Please go back to 9 and select another answer.

(from page 13)

You feel that the word "trait" is the genus of "likability".

Good. The phrase in the third line, "the trait of likability ...", suggests the generic link.

In case ERICT fails to show the relation between trait and likability, we now record it on our form in the following manner, using parentheses to show that it is a doubtful term:

1	2	3	4	5	6
Kind of Document	Educational Establishment (or part of)	Person Studied	Attributes or Actions (of terms in any column	Curriculum	Teaching and Learning Methods and Administration
			Likability (Trait)		

The introductory statement "AN EARLIER article ..." means that generally speaking we should not expect to use the key terms here. For example, "grade point average" is a measure of achievement which refers to another study so we should not list it as a candidate term merely on the strength of this paragraph.

We should remember, however, that "grade point average" may occur in the present article and be prepared to use it when it occurs. Such terms may also suggest useful concepts which are implicit in the present document, though not explicitly stated.

The first paragraph says "An earlier article reported (on tests with) ... high school seniors. "High school seniors" should

be selected as a candidate term 22

be ignored because it is a keyword for "an earlier article" 24

not be selected as a candidate term yet, but be kept in mind. 26

(from page 9)

No. The description headed "Purpose and Procedure" near the beginning of the article is an indication that it does belong to one of the categories.

Please go back to 9 and select another answer.

(from page 20)

No. You should not select "High school seniors" as a candidate term, since its use here is no more than a brief reference to what is described as "an earlier article." But the present document is on roughly the same subject and you will do well to bear "High school seniors" in mind as a possible or even likely keyword. Attention of this kind can save time and effort in indexing.

Now turn to 26 and go on with the lesson.

(from page 28)

You say you can find 6 to 10 terms that reasonably fit into the form of the question.

No. If you included terms like "purpose," "present article," "report," "findings," "investigation," etc., none of these fit reasonably in a question. Ignoring the words mentioned above, then, go back to page 28 and try again.

(from page 20)

No. Although you should not include the term "High school seniors" as a keyword for this paragraph (since its only use here is in a brief reference to "an earlier article." You will do well to keep "High school seniors" in mind as a possible keyword since the present document is concerned with a similar topic. Attention of this kind can save time and effort in indexing.

Now go on to 26 and continue with the lesson.

You say you can find 1 to 5 terms that reasonably fit into the form of the question. Good, so can we.

Many terms do not fit reasonably into the framework of a question "Have you any documents on x "?: "purpose," "present article," "report," "findings," "investigation," (one might say that all educational research documents refer to investigations), "which," "used," "actual situation," "predictive situation." "Predictive situation" echoes one you have already provisionally accepted (prediction) — but it adds nothing significant to the concept implied in this form (prediction as distinct from Predictive).

The phrase "The purpose of the present article ..." should alert us to the possible presence of an important keyword. We find the heart of the matter in the phrase, "an investigation in which formula one was used in an actual predictive situation" — but the phrase "formula one" cannot be considered a useful keyword. However, it does imply the use of "Grade point averages" in relation to "Ability scores" and "Likability ratings." We did not use "Grade point averages" as a candidate term before, since it referred to an earlier study. May we use it now, in spite of the fact that this paragraph does not mention it specifically?

Yes 29

No 31

Good. "High school seniors" cannot be justified as a keyword for this paragraph, but we may keep it in mind as a possible keyword later.

Another problem raised by the first two paragraphs is the difficulty of using statements of value to define types of documents in educational research. Neither quantitative values like .550 or .668, as found in the second paragraph, nor qualitative values like "high correlation" are useful as keywords. To anyone wanting information on "high correlation" a document on any degree of correlation may be relevant, and a useful search is likely to be for "correlation" regardless of value statements.

Should precise quantitative values be indexed?

Yes 30

No 28

(from page 28)

You say you have already listed all terms.

Have you anything on ninth grade ability scores? Go back to 28 and see if you can find any more that should be considered.

Your conclusion is that precise quantitative values, such as those found in this document, should not be indexed.

And you're right. We should not be sidetracked by the mention of a particular value for the validation of a certain assumption. The real subject is the relation between the phenomena in question (e.g. between likability ratings and grade point averages), and any documents discussing this should be retrieved.

PURPOSE AND PROCEDURE

The purpose of the present article is to report the findings of an investigation in which formula one was used in an actual predictive situation.

The ninth-grade students in one of our junior high schools served as the subjects in this study. Ability scores were available for slightly over 200 of these students, since they had been given the California Test of Mental Maturity (CTMM) near the end of the sixth grade.

Applying the simple criterion suggested previously (Have you any documents on x ?), how many terms can you find in these two paragraphs that you haven't already listed?

From 6 to 10 terms.	23
From 1 to 5 terms.	25
All the terms have already been listed.	27

Correct. In addition to "Grade point averages" (which we have now decided is relevant to this document), other terms fit into the question: "Have you anything on x ?" In the order in which we come across them in paragraphs 3 and 4, these terms are: "Ninth grade," "Students," "Junior high schools," "Ability scores," "California Test of Mental Maturity (CTMM)," "Sixth grade." You'll notice that one term, "Ability scores" is one you already have on your list, so it need not be repeated.

Each one of these terms fits into the role of representing a class of information on which questions may well be asked: e.g., "Have you anything on Ninth grade ability scores?" or "Have you anything on achievement prediction in Junior High Schools?" Now we must ask if each of these terms represents new information or information vital to the indexing of this document.

The first problem is the word "students." This is a very general term; the notion of student is already implicit in many of the terms we have already accepted (e.g., high schools, ninth grade). So we will record this as a very doubtful candidate term by putting it in parentheses.

The second problem is the concept of CTMM. This names a specific type of test, but the test itself is not described or evaluated in any way in this document. Furthermore, it is certain that much fuller information on this test is available elsewhere, so for the time being, we can ignore it.

Which candidate terms can we add to our list?

Ninth grade, Students, Grade point averages, Junior high schools.	32
Ninth grade, Grade point averages, Junior high schools	34
Ninth grade, Students, Grade point averages, Sixth grade, Junior high schools.	36

30
(from page 26)

No. Neither quantitative nor qualitative values are useful as indexing terms in educational research, since they apply to other terms much more likely to be highly relevant to a search. That a score of .3 or .8 was made on a test, does not matter in this field so much as a description of the test and its use.

Now go on to 28 and continue with the lesson.

You would be wrong not to use "Grade point averages" as a candidate term now, because this paragraph, though it does not refer explicitly to "Grade point averages," does imply them in discussing "formula one."

You must always remember to include terms that refer to the meaning of the text if those actually mentioned in it are insufficient.

Now go on to 29 and continue with the lesson.

You say that we can add to our list of candidate terms: "Ninth grade", "Students", "Grade point averages", "Junior high schools".

Yes. You should include "Students", even though it is doubtful. You can indicate this by putting it in parentheses.

1	2	3	4	7	8
Kind of Document	Educational Establishment (or part of)	Person Studied	Attributes or Actions (of terms in any column)	Testing, Evaluation Measurement	Agents or Means (of Col. 7)
Educational Experiment	Ninth grade Jr. High Sch.	(Students)	Likability (Trait) Ability School achievement Achievement	Ratings Scores Prediction	Grade Point Averages

You may notice here that "Junior high school" should make "School" unnecessary as an isolated term. But we have provisionally coordinated "School" with "Achievement" ("School achievement"), so at this stage it must be retained. If we find in the translation stage that ERICT does not coordinate school (or a synonym for school) with achievement, but leaves it on its own, then "Junior high school" will be all that is required.

Please continue on 33.

> "Likability" ratings by teachers were obtained on the students in the manner described previously, except that care was taken to supplement the written instructions with a talk to the teachers. At this personal appearance, additional explanations of the rating technique were given and suggestions made as to how to proceed in discriminating among cases at first perceived as near-equal in "likability". Stress was also put upon the importance of accuracy and independence of judgment in each case. This additional effort at orientation and explanation for the teachers was done in an attempt to improve the reliability of their ratings.

"Reliability" (of ratings) could be an important concept. However, this paragraph merely states that something was done to improve reliability. It contains no information that justifies indexing the term.

Should we include "teachers" as a further candidate term for this document?

Yes, because it is the agent of the operation "rating."	35
Yes, because unless it is used, the document might be mistakenly retrieved in a request for student or parent ratings.	37
Yes, for both the above reasons.	41
No, because we take it for granted (in the context of school achievement) that the teachers will be doing the rating.	39

34
(from page 29)

You say that we can add to our list of candidate terms:

Ninth grade, Grade point averages, Junior High schools

But you've forgotten one candidate term that we really should include in our list until we get to the translation stage, even though we consider it a doubtful one.

Return to 29 and select the correct list of candidate terms.

You say that we should include "Teachers" as a further candidate term because it is the agent of the operation "rating."

You're partially right, but there is a better answer. Please return to 33 and select it.

(from page 29)

You say we are left with the following to add to our list of candidate terms:

Ninth grade, Students, Grade point averages,
Sixth grade, Junior high schools

But we've decided to ignore "Sixth grade" because it simply describes the age at which the 9th grade students received their ability rating. It seems quite insignificant as a subject of this document.

Please return to 29 and select the correct list of candidate terms.

(from page 33)

You say that we should include "Teachers" as a further candidate term because, unless it is used, this document might be mistakenly retrieved in a request for ratings by students or parents.

You are partially right, but there is a better answer. Please return to 33 and select it.

(from page 41)

You say we should put "Teachers" in Column 3 under "Persons studied".

No. If you did, it would look like this:

3	4	5	6	7	8
Person Studied				Testing, Evaluation, Measurement	
Teachers----------				----Rating	

If you record it in the way shown above, the index term would mean the rating of teachers. To avoid confusion, we must list "teachers" in column 8, as an agent, like this:

3	4	5	6	7	8
				Testing, Evaluation, Measurement	Agents or Means (of Col. 7)
				Rating-----Teachers	

This indicates that the teacher is doing the rating, as he is the agent. Now you have your ninth candidate term. Please continue on 43.

(from page 33)

You say that we shouldn't include "Teachers" as a further candidate term for this document because we take it for granted, in the context of school achievement, that the teachers will be doing the rating.

But this sort of rating might be done by students, parents or other assessors.

Please return to 33 and select another answer.

40
(from page 44)

No. These two paragraphs are concerned with minor details of test procedure. There are no new terms here for indexing.

Please continue on 46.

You say we can include "Teachers" as a candidate term, not only because it is the agent of the operation "rating," but also because, unless it is indexed by this term, the document might be mistakenly retrieved in a request for ratings by students or parents.

Right. Paragraph 5 refers to "Ratings by teachers." We should not take it for granted that teachers did the rating. It could be done by students, parents or other assessors.

If "Teachers" is not indexed, the document would be mistakenly retrieved in a search for ratings by students or parents, and it would not be retrieved in a search which specified rating by teachers.

In order to make clear that the subject we have to index is "Rating by Teachers," and not "Rating of Teachers," in which column should we put "Teachers"?

In column 3 (Person studied) 38

In column 8 (Agents or Means) 43

42
(from page 47)

You say you would consider "Biserial correlation" as a candidate term for this document.

We can't agree with you. The discussion on tests and statistical techniques are applicable here. Biserial correlation is an example of an analytical technique which was applied to the predictive results; although the document explains how it was done, it is not an exhaustive or general description. Moreover, we are referred to a book on psychological statistics in which this method is probably described at some length.

Now go on to 45 and continue with the lesson.

You say we should put "Teachers" in Column 8 under Agents.

Yes. By indicating that the teacher is the agent, we read this as rating by teachers.

To avoid confusion, then, we list our ninth candidate term as follows:

3	4	5	6	7	8
				Testing, Evaluation Measurement	Agents or Means (of Col. 7)
				Rating-------	Teachers

Paragraph 5 also gives details of how the investigators explained the method of rating, but it does not give sufficient information on the concepts mentioned (written instructions, rating techniques, reliability, etc.) to justify indexing those terms.

When we discussed exhaustivity in Lesson 2 we stated that the choice of terms is not settled simply by recognizing whether a term will function well as the name of a class, but also by deciding how many of these classes we can afford to recognize and still index efficiently and economically. We also stated that there is no easy solution. In general, you should index all those concepts to which the document refers prominently, but avoid indexing those to which only passing reference is made. When in doubt, ask yourself: "If I were asking for information on x , would I like to see this document, or would I regard the information it gives on x not worth the retrieval of the document?"

Continue on 44.

The above part of the experiment was carried out in early December. During the latter part of the same month, the ratings were evaluated numerically, both ability scores and "likability" ratings converted to standard scores, and the calculations of formula one made to obtain the predicted scores of the students at the end of the first semester, which was to occur in early February. Solely on the basis of these predicted grade-point averages, the students were listed in rank order, beginning with the student with highest predicted score. On January sixth, a copy of this list was left with the principal to retain as an indication that the experiment was "predictive" in nature.

Near the middle of February, and after report cards had been returned, the grade-point averages of the students (derived by letting A = 5, B = 4, C = 3, D = 2 and F = 1) were calculated and the students ranked on this basis, beginning with the student of highest average. Thus, two lists of the students — the one of "predicted" and the one of "actual" rank order of achievement — were available for comparison.

Do paragraphs 6 and 7 contain any new terms for indexing?

Yes	40
No	46

You say you would not consider "Biserial correlation" as a candidate term for this document. Neither would we. "Biserial correlation" is an example of an analytical technique which was applied to the predictive results; although the document explains how it was done in the particular circumstances, it is not an exhaustive or general description. Moreover, a reference is made to a book on psychological statistics in which, presumably, this method is described at some length.

Paragraphs 11 through 14 are headed by the term "Discussion," and though they would not be expected to provide new candidate terms they may clarify the relations between those you have already recognized and their significance. For example, Paragraph 11 refers to "ability test scores."

3	4	5	6	7	8
	Attributes/ Actions (of 2 or 3)			Testing, Evaluation Measurement	
	Ability----	----------	----------	Scores (Test)	

Paragraph 11 also refers to the predictive power of "Equation one." (referred to in Paragraphs 3 and 4 as "Formula one")

We should

include "Equation one" as a candidate term. 53

include "Formula one" as a candidate term 51

not include a candidate term for this at all. 48

Good. These two paragraphs are concerned with minor details of test procedure which do not require indexing.

> RESULTS
>
> First, a word about the reliability of the teacher ratings in this experiment. Using the split-half method, wherein the average of the first half of the ratings for any subject is paired with the average of the second half, the obtained correlations between the halves was .751. When corrected by the Spearman-Brown formula, the coefficient of reliability becomes .857 which, for ratings of this nature, is judged to be quite satisfactory.

Paragraph 8 introduces a section headed "Results." An index description must include the information content of the whole document, not only the results of an experiment. In an extreme case we should not refuse to index the account of a useful investigation because its results were inconclusive or its hypotheses proved incorrect.

Paragraph 8 refers again to the reliability of ratings. The "split half method" and the "Spearman Brown formula" were used, but no other information is given.

The general principles governing our choice in such matters have already been explained. Mere reference to the use of a particular test or technique in an investigation does not usually justify its indexing. Most general accounts of reliability assessing would give substantially more information than this, and the information given here does not seem sufficient to justify its recognition.

Now go on to 47.

(from page 46)

The method of biserial correlation (3) was used to analyze the results on prediction of achievement. To do this, the list of students based on actual rank order of achievement was dichotomized by choosing the grade-point average of 3.00 as an arbitrary division point. This gave an "Upper" group made up of those with grade point average above 3.00 and a "Lower" group composed of those with grade point average 3.00 and below. The biserial r between the dichotomized variable of actual achievement and the predicted achievement scores was .783. The ratio of the variance of "predicted" to "actual" achievement, then, becomes .613. This means that under the conditions of this study, use of the variables of "likability" ratings and ability scores in combined form has made it possible to account for about 61 percent of the achievement variance.

The biserial technique of analysis used in this case not only gives an approximate degree of relationship between the variables involved but also affords a convenient and instructive way of perceiving the results. Figure 1, for example, shows the distribution of the "Lower" and "Upper" groups of students along the y — or predicted score — axis. The means of the combined, "Upper" and "Lower" groups (M_y, and M_1, respectively) and the indicated frequencies within each interval show quite clearly the degree of overlap and, thus, the size of error in prediction.

Would you consider "Biserial correlation" as a candidate term for this document?

Yes 42

No 45

Good. The idea of "Formula" or "Equation" is far too general for indexing, and the detail given in this document does not justify its inclusion. In any case, we have already listed the concept to which the formula applied: "Achievement prediction."

> Equation one was developed using data obtained on high-school seniors and indicated at that time "in a retrospective sense" the combination of ability test scores and "likability" ratings that would have given the best prediction of grade-point averages for these students. The fact that use of this equation has resulted in reasonably good prediction for the achievement of ninth-grade students offers some, but not conclusive, evidence for its general applicability at the high-school level. There should be similar experiments with it at other high-school levels, including the seniors, before definite conclusions can be drawn. However, the close similarity of results obtained between "actual" and "retrospective" uses of equation one in the two experiments conducted so far tends to strengthen one's belief that the method can be used with some degree of success at more than one high-school grade level. For instance, the percentage of "errors in prediction" among the highest 100 students in the two cases is essentially the same (21 and 19).

This paragraph suggests that "Equation One" may be applicable to high school grades in general, not just to seniors and 9th grade.

Does this sentence indicate a need for a change in our candidate term "Junior high schools"?

> Yes. "Junior high schools" should be broadened to "High Schools". 52
>
> No. This sentence does not seem to justify the change. 50

No. You should not include "Errors" as a candidate term. It is the antonym of "Reliability" and at the very least would have been represented by that term. But since "Reliability" has already been rejected there is no point now in including either term.

Now go on to 55.

Yes. If the sentence gave significant information, we should have to broaden our candidate term "Junior high schools" to "High schools," but it doesn't. For anyone who wanted to be sure of seeing everything that had some relevance to achievement prediction in high schools, the search program could include Junior high schools as well as High schools.

A well established indexing rule is that opposites should be treated as synonyms i.e. they should be represented by the same index term. For instance, "tolerance" and "intolerance" may both be indexed by the term "tolerance." Of course, a reference is made from the rejected form to the one accepted (Intolerance use TOLERANCE).

In the last sentence of Paragraph 12 the term "Errors" is an antonym of "Reliability" — a concept that we considered and rejected on the score of inadequate information given.

Should we use "Errors" as a candidate term?

Yes	49
No	55

(from page 45)

Although the document does give the equation and does not just say that it was used, and although it refers by name to both "Formula One" and "Equation One," the equation is not described sufficiently, or even named clearly. There is no evaluation or <u>new</u> information. It is therefore no use as a candidate term.

Now turn to 48 and go on with the lesson.

52
(from page 48)

You feel that this indicates the need for a change in our candidate term "Junior high schools" which should be broadened to "High schools."

No. If this amounted to significant information we should have to broaden our candidate term "Junior high schools" to "High schools," but this sentence does not seem to justify the change. For anyone who wanted to be sure of seeing everything that had some relevance to achievement prediction in high schools, the search program could include Junior high schools as well as High schools.

Now you may continue on 50.

(from page 45)

Although the document does give the equation and does not just say that it was used, and although it refers by name to both "Formula One" and "Equation One," the equation is not described sufficiently, or even named clearly. There is no evaluation or <u>new</u> information. It is therefore no use as a candidate term.

Now turn to 48 and go on with the lesson.

54
(from page 56)

You say that "Attitude" and "Achievement" are the two new words we can add to our list of candidate terms.

Check your list — you should have one of these already listed. Turn back to 55 and try again.

Good. "Errors" would in any case have been represented by its antonym "Reliability," and we have already decided to reject this term.

> In spite of the favorable results obtained so far with equation one there is still almost 40 percent of achievement variance to be explained. This means that other variables related to achievement must be found and the manner of their contribution studied before increased accuracy of prediction can be assured. A step in the search for other potentially useful variables was made in the present study. In the case of 11 students, for whom predictions based on equation one were most in error, the teachers were asked to supply additional information. For those falling below predictions, the teachers were asked: "Why did these students not make better grades?" For those doing better than predictions, the teachers were asked to "Describe these students in terms of their attitude toward school work." Some of the replies are mentioned here.
>
> (a) Why those students falling below predictions did not make better grades:
>
> "Little class recitation."
> "Occasionally doesn't do homework."
> "Lacks interest, skipped school."
> "Slow at getting make-up work in."
> "Is satisfied with less than perfection."
>
> (b) Attitude of those students who exceeded predictions:
>
> "Very studious, always makes up her work."
> "Very diligent worker."
> "Works hard for what she gets."
> "Works well in class."
> "Very conscientious."
>
> On a purely qualitative basis, these inversely related statements seem to have most in common the factor of "achievement motivation" which in the present context, would, appear to have the positive meaning of "desire to make good grades." By somewhat different means, others have arrived at similar variables (1, 2).

This refers to the problem of those students who did not "achieve," according to the expectations of the predicting teachers.

Please continue on 56.

(from page 55)

The term "Achievement variance" is too general to be useful. But we should look for a term to refer to the small test now described. The description of the procedure gives no keywords until the phrase "Attitude toward school work" occurs in the next to last sentence before the replies are listed. This was the basis of the question put to students who exceeded the predictions; no good indexing term offers itself to define the question put to those who fell below prediction.

But in paragraph 14 the common factor between students exceeding and failing prediction is described as "Achievement motivation," and this phrase is a good example of what the indexer looks for — a term which succintly conveys an important concept. Moreover, a reference to two other articles at this point discloses a further use of the term "Motivation." Again, the problem of whether to link or not arises, since the motivation refers to achievement and not, say, to likability.

Which two new terms can we add to our list? (they may, of course, be linked to terms we have used already)

Attitude and Motivation	58
Attitude and Achievement	54
Achievement and Motivation	61

(from page 60)

No. You have used the plural form "Grade-point averages" instead of the singular form that ERICT prefers. You should always check carefully with ERICT to make sure that you have the correct form and spelling of the term.

No turn to 64 and go on with the lesson.

You say that "Attitudes" and "Motivation" are the two new words we should add to our list of candidate terms.

Right. Since they are both very general terms they should be linked with the terms to which they refer.

3	4	5	6	7	8
Person Studied	Attributes or Actions (of terms in any column)	Curriculum	Teaching and Learning Methods and Administration		Agents or Means (of Col. 7)
(Student)	Attitudes	----------	School-work		
	Achievement	----------	----------	----------	Motivation

That concludes the text of the document, but you will notice in your copy that the document includes a diagram entitled "Predicted Score Axis." When a document includes tables, diagrams, etc., these also should be checked for keywords. Usually they duplicate information already referred to in the text, but they may provide more succint terms. In this diagram, for example, we find "Grade-point average" used as a measure of achievement. This confirms our previous recognition of the term.

You should now have a complete list of all the candidate terms we have discussed. Check your list, then look on 59 and see how it compares with ours.

Continue on page 59.

(from page 58)

Here is our list of candidate terms for this document. Is yours exactly the same? If not, please correct it.

LIST OF CANDIDATE TERMS

2	3	4	5	6	7	8
Educational Establishment (or part of)	Person Studied	Attributes or Actions (of terms in any column)	Curriculum	Teaching and Learning Methods and Administration	Testing, Evaluation Measurement	Agent or Means of Col. 7
9th Grade Jr. High Sch.	(Students)	Likability (Trait)			Ratings	
		Ability			Scores (Test)	
		School Achievemt.				
		Achievemt.			Prediction	
	(Students)	Attitudes		Schoolwork	Ratings Grade Point Averages	Teachers
		Achievemt.			Motivation	

We can now look up each of the candidate terms in the ERIC Thesaurus. As we discuss each term, be sure to list the translation on a separate piece of paper. The final list will contain the indexing terms from ERICT and any new terms that you are recommending. Remember to make a note beside these terms.

Turn to 60 and go on with the lesson.

(from page 59)

Translation of Candidate Terms into ERIC Language

We have 11 terms to translate into the language of ERICT representing different kinds of problems in translation. We shall not deal with them in their present order, but in the order of the kinds of problem, beginning with the easiest.

The first term in our list, "Experiments," We shall not consider further since it is not a subject word.

There are some terms which are simple to translate. If we look for "Junior high school" in ERICT, we find the entry:

JUNIOR HIGH SCHOOLS
RT Senior schools (etc.)

Our choice of candidate term is thus confirmed by ERICT, and we use the term (in the plural form approved by ERICT) as the correct indexing term.

We have a candidate term "Grade-Point average." Look in ERICT and choose an indexing term for this

You say that "Achievement" and "Motivation" are the two new words we should add to our list of candidate terms.

Check your list — one of these should already be listed. Return to 55 and try again.

62
(from page 60)

No. You have chosen a term that ERICT lists, but you failed to notice that GRADES (SCHOLASTIC) gives GRADE-POINT AVERAGE as an NT, and this is the very term that you want. Always check the references at a term you consult to see if a better term is given there.

Now turn to 64 and go on with the lesson.

No. You have chosen to use the candidate term as it stands, but if you had looked in ERICT carefully you would have seen the entry

Achievement Motivation
USE MOTIVATION

Always look at references carefully to make sure that the term you have consulted is available and appropriate.

Now go on to 67 and continue with the lesson.

(from pages 60, 57, 62)

Sometimes the candidate term is listed in ERICT, but only as an unused term, with a reference to the preferred term. For instance, our candidate term "School achievement" appears as:

School achievement

Use Academic achievement

When we look up Academic achievement we find:

ACADEMIC ACHIEVEMENT

UF School achievement (etc.)

So ACADEMIC ACHIEVEMENT is our translation of the candidate term "School achievement."

What is the correct translation of "Achievement motivation"?

Achievement motivation	63
Motivation	67
Achievement and Motivation	68

(from page 67)

No, "Ninth grade" does not appear in ERICT and you may not use it as an index term. If you had looked up"Grade 9" you would have seen that ERICT prefers to list all the grades by number under the word GRADE. Phrases of two or more words should always be checked under each word in case ar inverted form is used, as GRADE 9 is used here.

Now turn to 70 and go on with the lesson.

Yes. Several factors point to the recommendation of a new compound term for inclusion in ERICT. The only translation already available in the thesaurus is ABILITY + SCORING. But variant word forms are normally listed, which means that at least we should recommend the addition of "Scores." However, there are two reasons for preferring a compound term. "Scores" is the kind of general term that is best used in a compound (hence our listing it in this way among the candidate terms). Moreover, ERICT does give us some guidance in that it lists the analogous forms ABILITY GROUPING and ABILITY IDENTIFICATION. Since the compound "Ability scores" implies tests, we do not need this term which we listed in parentheses in our concept indexing.

Some compound candidate terms seem to be listed in ERICT, but on examination they prove to have a different meaning. One of the uses of the scope notes and lists of references under each term in ERICT is to show you the scope and meaning of each term.

At the same time it may be that ERICT does not provide you with an alternative term to represent your concept accurately, and you may then have to suggest a new term for inclusion in the thesaurus.

For example, our candidate term "Teacher ratings" means "ratings by teachers," but the entry in ERICT, TEACHER RATING, clearly confirmed by the entry TEACHER EVALUATION to which it refers, means "ratings of teachers." For our meaning the only solution seems to be the use of the separate terms TEACHERS and "Ratings."

"Rating" does not appear alone in the Thesaurus, though EVALUATION does. Since TEACHER RATING is an NT of TEACHER EVALUATION, we should use "Rating" as an NT of EVALUATION and suggest it for inclusion in ERICT. The translation of our candidate term "Teacher ratings" should therefore be TEACHERS and "Rating" (Suggested as a new term for ERICT).

What is the translation of our candidate term "Achievement prediction"?

Achievement prediction	71
Achievement tests	73

(from pages 64, 63)

Good. Sometimes the candidate term will not be listed in the form you have in mind, but you should always check first to see if it appears as a synonym or in a different form.

What is the correct translation of "Ninth grade"?

Ninth grade	65
Grade 9	70
Grades (scholastic)	69

68
(from page 64)

No. You have not read the references and notes in ERICT at the terms you have chosen. Do so, and you will find yourself directed to a better answer. Then go back to 64 and try the question again.

No, "Grades (Scholastic)" has a different meaning. It is true that "Ninth grade" is not listed in ERICT, and you were quite right to think of looking under "Grade" — but if you had looked a little more carefully, you would have seen all the grades listed by numbers just before the entry GRADES (SCHOLASTIC). So that you could have used the entry GRADE 9.

Now turn to 70 and go on with the lesson.

(from p ges 67, 65, 69)

Good. ERICT does not list "Ninth grade" as an indexing term, but as with all phrases of two or more words, it is essential to look under all the words in the phrase in case an inverted form is used. Here the inverted form GRADE 9 is listed in ERICT.

Although many pre-coordinated terms are listed in ERICT there may be compound candidate terms not listed. In each case you must decide whether the individual terms are satisfactory, or whether you should recommend the addition of a new compound. Remember that we discussed the reasons for pre-coordination in Lesson 2.

What is the best translation of "Ability scores"?

Ability scores	66
Ability and Scores	72
Ability and Scoring	75

Yes. "Achievement prediction" refers in ERICT to a preferred term ACHIEVEMENT TESTS, but the two terms have quite distinct meanings. It is time to re-examine this entry and submit ACHIEVEMENT PREDICTION as a new term.

Sometimes our candidate term is obviously too long or complex for ERICT to include it as a pre-coordinated term. "Student attitudes to school-work" is a good example. What we must do is to split it up and include elements that will cover the same meaning.

If we look up ATTITUDES in ERICT we find a long and mixed batch of NT's of which School Attitudes and Student Attitudes seem the most likely. We can reject School Attitudes as being too general. If we accept Student Attitudes and think of it as a part of the whole description, "Student attitudes to school work" what shall we use to complete the description?

72
(from page 70)

No. It is true that ERICT usually includes variant word forms (which would suggest adding SCORES as well as SCORING), but other factors suggest recommending a new compound term.

Please turn to 66 for explanation.

(from page 66)

No. It is true that ERICT refers you from "Achievement prediction" to ACHIEVEMENT TESTS, but the two terms have quite distinct meanings. If one were to retrieve all documents on achievement testing every time a search was made for achievement prediction, the precision ratio would be extremely low. If is time therefore, to re-examine ERICT'S entry ACHIEVEMENT TESTS and its reference from Achievement prediction, and submit ACHIEVEMENT PREDICTION as a new index term.

You should always be ready to consider the submission of new terms for inclusion in ERICT; its development depends on your specialized subject knowledge and exploration of the literature.

Now go to 71.

No. You are quite right to suggest the inclusion of a new term for this concept, but "the list of NT's under ATTITUDES suggests that a compound term should be preferred."

On the analogy of "School achievement prediction," which we split up into "School achievement" and "Achievement prediction" we should split "Student schoolwork attitudes" into "Student Attitudes" and "Schoolwork Attitudes." "Schoolwork attitudes" is not included in ERICT and we must therefore recommend its inclusion on the basis of its presence in the document we are indexing.

Now turn to 76 and go on with the lesson.

(from page 70)

No. It is true that this is the nearest translation you can find already in the thesaurus, but several factors point to the recommendation of a new compound term.

Please turn to 66 for an explanation.

Good. On the analogy of "School achievement prediction," (which we split into "School achievement" and "Achievement prediction") "Student schoolwork attitudes" should be split into "Student attitudes" and "Schoolwork attitudes." "Schoolwork attitudes" does not appear in ERICT and we must therefore recommend it for inclusion.

One of our first candidate terms was "Likability rating." This is a central theme of the document, but it does not appear in ERICT, nor is there anything like it. We provisionally recorded the generic term "Trait" with "Likability," but there is nothing in ERICT under this term either.

But "Likability" and "Trait" are characteristics or qualities of persons, and if we consult ERICT for characteristics, we find first:

Characteristics (individual)
USE INDIVIDUAL CHARACTERISTICS

and then:

INDIVIDUAL CHARACTERISTICS
UF Personality traits

This confirms our original train of thought. But is the term INDIVIDUAL CHARACTERISTICS too general to use here? We have said already that in principle we should try to index specifically and not be content with terms which are more general than the concepts we are trying to index.

You should be prepared on occasion to develop new index terms yourself, as we have seen already, but you should do this with caution, inspecting other terms for guidance. Let us look for any other specific traits already recognized in ERICT to justify recognizing "Likability" as an index term.

INDIVIDUAL CHARACTERISTICS
NT INTEGRITY
PHYSICAL CHARACTERISTICS

raises two points that must be considered.

Please continue on 77.

(from page 76)

INTEGRITY is a trait and has been included because a document on it has already been indexed; this seems to justify using "Likability" for the present document.

The appearance of "PHYSICAL CHARACTERISTICS" reminds us that there are "levels" of genus/species relationships, and that NT relations are usually shown "one step at a time." If we look under PHYSICAL CHARACTERISTICS we find that it, in turn, has its own species:

PHYSICAL CHARACTERISTICS
NT AGE
SEX (etc.)

We must ask ourselves if there should be an intermediate term between INDIVIDUAL CHARACTERISTICS and "Likability," because the indexer in suggesting new terms for inclusion in ERICT should be familiar with the reference structure. But we have already seen that ERICT has rejected "Personality traits" (preferring INDIVIDUAL CHARACTERISTICS) and since this would have been the most likely intermediate term, we assume that "Likability" can be regarded as a direct species of INDIVIDUAL CHARACTERISTICS.

What is your final decision on "Likability"?

We should reject it because it is not in ERICT. 79

We should accept INDIVIDUAL CHARACTERISTICS. 80

We should accept "Likability" and recommend its inclusion in ERICT. 82

78
(from page 71)

No. "Study" is too general a term in ERICT, as can be seen by looking at the references listed in that entry. There is no reason why you should not recommend a new term for inclusion in ERICT if the concept is not represented.

Now go back to 71 and try the question again.

You have decided to reject "Likability" as an indexing term because it was not listed in ERICT.

But ERICT is not complete. The decision must be made now as to whether this term is necessary for retrieval of the document.

Return to 76 and review the discussion on "Likability," then see if you can make a better decision.

80
(from page 77)

You have decided to accept INDIVIDUAL CHARACTERISTICS to describe the concept of "Likability" for this document.

No. You should not be content with terms which are more general than the concept you are trying to index. You should select the most specific term that the inquirer is likely to use.

Return to 76 and read the discussion on "Likability" again — then see if you can make a better decision.

No. We were very doubtful in the first place about including such a general word as a candidate term, and the translation process shows clearly that it is so general in ERICT as to be virtually useless on its own as an indexing word. We shall abandon this term.

Now turn to 83 and go on with the lesson.

(from page 77)

You have decided to accept "Likability" as an indexing term and recommend its inclusion in ERICT. Good. The precision with which the ERIC store can be searched is dependent upon the specificity of the indexing.

We must finally decide whether to recommend "Likability" as a separate term (for post coordination with rating) or whether to recommend the compound form "Likability rating." Once again we are dealing with a very general term (rating), and with the added guidance of ERICT, which includes Achievement Rating and Teacher Rating, we should choose "Likability Rating."

There is one last candidate term to be considered: "Students." There are five and a half columns of NT's and RT's under this term, but no scope note to tell us when this term should be used. Should we use it here?

Yes 81

No 83

Good. Here is the final list of descriptors for the document "The Use of Likability Ratings and Ability Scores in the Prediction of School Achievement." Compare it with your own.

1. JUNIOR HIGH SCHOOLS
2. GRADE-POINT AVERAGE
3. ACADEMIC ACHIEVEMENT
4. MCTIVATION
5. GRADE 9
6. ABILITY SCORES
7. STUDENT ATTITUDES
8. TEACHERS
9. RATING
10. ACHIEVEMENT PREDICTION
11. SCHOOLWORK ATTITUDES
12. LIKABILITY RATING

You have recommended the following for inclusion in ERICT:

Ability scores

Rating

Achievement prediction

Schoolwork attitudes

Likability rating

Each of these are terms that may be used in the search, so they should be included in ERICT. Your recommendations should be noted as you go through the translation stage. Your supervisor will describe the procedure for completing the appropriate form to be sent to ERIC Central.

Continue on 84.

Major and Minor Terms. There remains the final task of selecting 5 major terms from the 12 translated terms. We explained earlier that the division of indexing terms into "major" and "minor" was a form of weighting. Only those terms which refer to concepts of major importance in the document should be included as "major terms."

The best way to find your most important terms is to write down a summarization of the document's main theme. For this document it would be: (Use of) Likability Ratings (and) Ability Scores (for) Prediction (of) Academic Achievement (as shown by) Grade-Point Average.

The indexing terms we have used for these ideas are:

Likability rating; Ability scores; Achievement prediction; Academic achievement; Grade-point average.

This gives us just five major terms.

The terms which we excluded from our summarization fall into two groups:

"Student attitudes," "Schoolwork attitudes," "Motivation," "Teachers," and "Rating" refer to concepts of minor significance in this document.

"Junior high school," and "Grade 9" are the "guinea pigs" of the experiment. Our concern is not so much with them as with the idea of establishing a correlation between the factors of likability, ability, and grade-point averages. The suggestion that the correlation may well apply outside this narrow range supports the view that the sample is not our main concern.

Continue on 85.

If we mark our major terms with one asterisk, the final list of indexing terms for this document is:

Indexing Terms For "The Use Of Likability Ratings And Ability Scores In The Prediction of School Achievement."

LIKABILITY RATING*
ABILITY SCORES*
GRADE-POINT AVERAGE*
ACHIEVEMENT PREDICTION*
ACADEMIC ACHIEVEMENT*
RATING
GRADE 9
JUNIOR HIGH SCHOOLS
TEACHERS
STUDENT ATTITUDES
SCHOOLWORK ATTITUDES
MOTIVATION

This completes our detailed demonstration of indexing an ERIC document. You may now go on to Lesson 4.

INDEXING FOR ERIC

Lesson 4

EXERCISES IN INDEXING

Indexing Exercise No. 2

Donaldson, Mary Jane and Harvey, John F. "Library School Instructor Evaluation." College and Research Libraries, November, 1966, pp. 470-477.

Look through the article and select from the answer choices below a term that describes the kind of document.

Controlled experiment

Research review

Case study

Survey

None of these

When you have made your choice turn to 2.

This article does not belong to any of the four major types (Controlled experiment, Research review, Case study, or Survey).

The title is "Library School Instructor Evaluation." Write on the form the concepts you decide to index and turn to 3 to check the answer.

From the title we obtain two concepts: "Library school" and "Instructor evaluation."

But "Library school" describes an establishment or department in which library science is taught. Since the subject is the purpose of the school, it seems best in such cases to index the subject, rather than the educational establishment. If the subject of the article was administrative, the term "library school" would be preferable. Here, however, we will use "Library Science." Now, if you have not done so already, enter these terms on the form.

1	2	3	4	5	6	7	8
		Person Studied		Curriculum		Testing, Evaluation, Measurement	
				Library Sci.			
		Instructor				Evaluation	

"Instructor" is entered in column 3 as the person being evaluated. If the instructor had been evaluating someone else, the term "Instructor" would naturally have gone in column 8 as the agent of the evaluation process.

Now please turn to 4 and read the first paragraph of the document to see what concepts it contains.

Paragraph 1 contains a brief description of the investigation.

> In 1960 the Drexel Institute of Technology graduate school of library science initiated a program of evaluation of faculty members by students. Student ratings are obtained for each section taught by full-time instructors during their first three quarters at Drexel, and for the first four courses taught by part-time instructors. Normally the evaluations are obtained in the last class meeting before the final examination.

List on your form the concepts you can find in this paragraph.

When you have done this, turn to 5 and compare your results with ours.

Paragraph 1. "Drexel Institute of Technology" should be listed as an identifier at the bottom of your form.

"Faculty" suggests a synonym for "Instructors," which could be recorded on the form as a possible aid when you come to the translation stage.

The library school is described as a graduate one, but the term properly describes the students rather than the school. We can therefore list "Graduate students" as the agent of "Ratings." "Ratings" by Graduate students adds further important information. Possible additions are "Part-time instructors" and "Full-time instructors," but their inclusion is not warranted merely on the strength of the first paragraph.

Now enter these new terms on your form if you have not already.

2	3	4	5	6	7	8
Educational Establish-ment (or part of)	Person Studied	Attributes or Actions (of terms in any column)	Curriculum	Teaching and Learning Methods and Admin-istration	Testing, Evaluation, Measure-ment	Agents or Means (of Col. 7)
			Library Sci			
	Instructor	----------	----------	---------	Evaluation	
	(Faculty)	----------	----------	---------	Ratings----	Graduate Students

Identifiers. Drexel Institute of Technology.

Please turn to 6 and read paragraph 2.

Paragraph 2. In this paragraph you will find the purposes of the study.

> The evaluations are intended to serve three purposes. Primarily, it is hoped that the ratings will aid the instructor in improving his teaching methods by pointing out specific areas needing improvement and by revealing to the instructor his students' reactions to him, both positive and negative, since "only by accident will the teaching of a man ignorant of the reaction of his class be effective." Second, the ratings assist the administration in judging faculty members' effectiveness. A third purpose is to give students a voice in school administration.

List on your form the concepts that represent the purposes of this study, then turn to 7 and see how your decisions compare with ours.

Paragraph 2. The purposes of the study may be represented by the following concepts: "Improvement of teaching methods," "Student reactions," "Student participation (in) School administration."

Enter these terms on your form if you have not already done so.

1	2	3	4	5	6	7	8

Improvement------Teaching methods

Student--Reactions

Student--Participation

School----------Administration

Please turn to 8 and read paragraph 3.

Paragraph 3. This discusses the reliability and validity of student ratings.

> Since the 1920's, and especially in the last two decades, student evaluation of instructors has received increasing attention from educators and researchers. In general, this research has shown student evaluation to be reliable and valid. In his survey of the subject in the "Handbook of Research on Teaching," H. H. Remmers cites various studies which have shown that student ratings were not appreciably influenced by the difficulty of the course, by the halo effect, by the grades given to raters, or by the instructor's popularity in extracurricular activities. Remmers cites further studies showing when twenty-five more ratings were averaged they were as reliable as the better mental and education tests, and when alumni graduated ten years earlier were asked to rate their college instructors, their ratings agreed substantially with those of the same instructors by students currently enrolled.

List on your form any new concepts you can find in this paragraph and then turn to 9.

Paragraph 3 refers to earlier studies and provides no indexing terms for this article. Continue with Paragraph 4 and examine it for concepts.

Paragraph 4.

> The use of student evaluation is apparently widespread: in 1960 Stecklein cited evidence that 320 colleges and universities in the United States had used student ratings. Despite the amount of attention given student ratings on the undergraduate level, however, this subject has received little attention at the graduate level and apparently none in library science. Yet it would seem that ratings might play a particularly important role in library education since, like instructors in other professional schools, most library school instructors have been trained primarily as professional practitioners rather than as teachers, and sometimes "the teachers drawn from the ranks of the profession are inadequately prepared for teaching." For the instructor with little experience or training in teaching methods, student ratings can point out areas on which he must concentrate to increase his effectiveness.

When you have done this turn to 10.

Paragraph 4 like Paragraph 3, refers to earlier studies and provides no indexing terms for this article.

Paragraph 5.

> With the hope that a study of the results of student evaluations might provide insights into the problems of teaching library science on the graduate level, a study was made of the five-year Drexel evaluation program. The data upon which the study was based were limited in several aspects: in the first place, since ratings were generally obtained only for part-time and full-time instructors while they were still relatively new to the job, they do not necessarily provide a representative sample of all sections taught; second, the form of rating sheet has undergone slight modifications; and third, in a few cases not all of the data was recorded on the master sheets.

The concept here has to do with the kind of document, even though it does not describe the whole document, so it may be conveniently listed in the first column.

Compare your reaction to this with ours on 11.

Paragraph 5 presents a new concept — "data." This is a very general term and examination of the tables in the article shows that we could use the more precise term, "Statistical data." This is a form-of-presentation term, similar to our major categories of Controlled experiment, etc. Although it does not describe the whole document, it may be conveniently listed in column 1 (kind of document) as follows:

1	2	3	4	5	6	7	8
Kind of Document							
Statistical Data							

We are continuing to note these form words during concept indexing so that you learn to distinguish them from subject words. At the translation stage we shall ignore them, since ERICT contains only subject words.

Turn to 12 for paragraphs 6 and 7.

Paragraphs 6 and 7.

The evaluation forms filled out anonymously by the students consisted of a list of attributes generally recognized to be associated with effective teaching. For each attribute students were asked to rate the instructor on a four-point scale — excellent, good, fair, and poor. The rating unit was the individual class section, so if an instructor taught three class sections in a given quarter he received three separate ratings. In compiling the scores for each section a master sheet was made which recorded the number of times each point on the grading scale was marked for each attribute. The total number of marks for each point on the grade scale was then figured. The final rating score was the percentage of all the marks which were at the excellent and good points of the scale. For instance, if thirty students in a section made a total of 200 evaluation decisions, 180 of which were at the excellent and good points of the scale, the instructor's rating for that section was 90 per cent.

Also recorded on the master sheet was a list of all voluntary student comments and the rank of that section compared with all other sections rated that quarter. At the end of the quarter — after all course grades had been turned in — a report was given to the instructor on an evaluation form, and a copy was kept by the administration.

These paragraphs are mainly concerned with the details of the rating procedure. There is only one new concept here of value for indexing. When you have decided on your choice turn to 13.

Paragraphs 6 and 7. The only new concept here of value for indexing is "Effective teaching," which we can list as follows:

1	2	3	4	5	6	7	8
			Attributes or Actions (of terms in any column)		Teaching and Learning Methods and Administration		

Effective ---------Teaching

Paragraphs 8 through 11. These paragraphs add nothing new, so we can continue with Paragraph 12. Please turn to 14.

Here is Paragraph 12:

> 3. Was there any connection between favorability of ratings and time of year? In the Colorado State College of Education survey summer school courses were rated higher than those taught during the regular college year. The same trend was evident at Drexel where summer quarter course ratings averaged 82.5 per cent while fall, winter, and spring quarter averages were 79 per cent, 78.8 per cent, and 78.3 per cent respectively. More striking than a comparison of average scores, however, was the fact that while summer quarter ratings accounted for only 28 per cent of all the ratings they accounted for 68 per cent of the twenty-five highest ratings.

This paragraph compares summer schools with regular offerings. The only difficulty here is that although "summer school" is a recognized term, there is no special way of referring to regular courses.

What, then, would you list as candidate term(s) from this paragraph?

Compare yours with ours on 15.

Paragraph 12. We mentioned that although "summer school" is a recognized term, there is no special way of referring to regular courses. This is one of many cases in which the regular, or normal, state is usually taken for granted and is mentioned explicitly only when a comparison is made. There is a comparison here, but we must remember that indexing terms should represent those concepts likely to be included in inquiries. It is doubtful that "regular courses" is such a concept. Furthermore, any discussion of summer schools would at least imply comparison with regular offerings. We conclude that it is sufficient to index only the concept "Summer schools."

1	2	3	4	5	6	7	8
					Teaching and Learning Methods and Administration		
					Summer Schools		

Now turn to 16 and read Paragraph 13.

Paragraph 13 deals with the comparison of men and women instructors. What would you use as candidate term(s)?

> 4. Which groups of instructors scores highest? A comparison was made of the scores received by women (48 per cent of all ratings) and by men (52 per cent). Table 3 shows the mean rating for women (81.7 per cent) to have been slightly but not significantly higher than that for men (79.2 per cent). Male instructors made up half of the top twenty-five instructors but two-thirds of the bottom twenty-five instructors.

After you have made your decision, please turn to 17.

Paragraph 13 deals with the comparison of men and women instructors. We can record this as follows, with a note that the inclusive term "Sex" may be used in the Thesaurus.

1	2	3	4	5	6	7	8
		Person Studied				Testing, Evaluation, Measurement	
		Men Instructors) Women Instructors) (Sex)				----------Comparison	

Please turn to 18 for a discussion of the next paragraph.

Paragraph 14. Keeping in mind that full-time instructors and part-time instructors bear the same relation to each other as regular courses and summer schools, select your candidate term based on our previous decision.

> A similar comparison was made between part-time and full-time instructors. Again the difference was slight, with the mean rating for part-time being 78.9 per cent and for full-time being 82.2 per cent. Part-time faculty members tended somewhat more than full-time to scatter to either extreme. They represented 55 per cent of all ratings but had 60 per cent of the top twenty-five ratings and 68 per cent of the bottom twenty-five. In general, sex and part-time or full-time status appeared to have little bearing on teaching effectiveness, but the interesting clusters at extremes are hard to explain.

After you have listed your candidate term(s) from this paragraph, please turn to 19.

Paragraph 14. We decided previously that we should not usually specify the normal or regular condition when it is part of a comparison. In the case of summer schools, it seemed likely that discussion of summer schools would at least imply some comparison with regular courses, and that it was sufficient to list only the term "Summer schools." In this paragraph, full-time instructors and part-time instructors bear the same relation, so in line with our previous decision, we include only "Part-time instructors" as follows:

1	2	3	4	5	6	7	8
		Person Studied					
		Part-time Instructors					

Please turn to 20 for paragraphs 15 and 16.

Paragraphs 15 and 16. These two paragraphs describe the characteristics of instructors:

> 5. In what characteristics were instructors rated highest? Lowest? The strongest characteristic was "Knowledge of and familiarity with subject," which was a strong point on half of the ratings. "Tolerance toward student difference of opinion" and "spirit of helpfulness in and out of class" were each strong points on 25 per cent of the courses. Table 4 shows no other characteristics to be rated highest on more than 10 per cent of the courses.
>
> The weakest characteristics were "organization of material" (31 per cent), "stimulation of thought" (29 per cent), and "effectiveness in putting subject across" (18 per cent) as seen in Table 5.

What concept would cover the material in these two paragraphs? After you have made your decision, please turn to 21.

Paragraphs 15 and 16 may be summed up by the concept "Instructor characteristics."

Now enter this new concept on your form, if you have not already done so.

1	2	3	4	5	6	7	8
		Person Studied	Attributes or Actions (of terms in any column)				

Instructor--Characteristics

Please turn to 22 and read Paragraphs 17 thru 19.

Paragraphs 17 thru 19 continue the discussion of instruction characteristics.

> It is interesting to compare Drexel strong and weak points with the results of a large-scale rating program carried out among undergraduates at Brooklyn College and reported by Riley, Ryan, and Lifshitz in "The Student Looks at His Teacher." In the Brooklyn study, as at Drexel, the highest scoring characteristic concerned knowledge of subject matter. Similarly, at Brooklyn the poorest scoring characteristic was "encouragement of thinking," and at Drexel "stimulation of thought" was one of the weakest points. Despite these correspondences, however, there was a significant difference between Drexel and Brooklyn instructors on "organization of subject material" — the third best characteristic of ten at Brooklyn, but the weakest at Drexel.
>
> There were several differences in the weakest and strongest characteristics by sex and by full-time status of faculty members. For instance, while almost one-fourth of the full-time instructor ratings were strong in "usual preparation for class," this was a strong point for only one-eleventh of the part-time instructors who usually had full-time jobs elsewhere in addition to their Drexel teaching. On the other hand, ratings for part-time instructors were 59 per cent higher than for full-time on "Knowledge of and familiarity with subject." Students also considered part-time instructors more tolerant of student difference of opinion, on a two-to-one ratio. Still another significant difference between part-time and full-time instructors lay in the area of "effectiveness in putting subject across" which was a strong point for one-fourth of the part-time instructors but for only one-tenth of the full-time instructors.
>
> An interesting difference between the ratings of male and female instructors was in "tolerance toward student difference of opinion." This attribute occurred as a weak point on ratings of female instructors significantly more often than on ratings of males.

List any new concepts that you find in these paragraphs and then turn to 23.

Paragraphs 17 thru 19. No new concepts occur in these paragraphs.

Paragraph 20. This paragraph compares elective and required courses.

> 6. Were electives rated higher than required courses? Although it may seem natural for students to have been more favorably inclined toward the courses they elected to take than toward required courses, the studies done at Brooklyn College 9 and at Colorado State College of Education 10 found no important difference here. At Drexel, as shown in Table 6, elective courses had a slight but not significantly higher mean than basic and intermediate required courses. Required courses, however, accounted for 54 per cent of all the ratings but only 24 per cent of the highest twenty-five ratings.

Please list your candidate terms, then turn to 24 to see how it compares with ours.

Paragraph 20 compares elective and required courses, so our concept is "Comparison of Elective and Required Courses." We have had an example of a comparison between terms already, so this one should be recorded in a similar way.

1	2	3	4	5	6	7	8
					Teaching and Learning Methods and Administration	Testing, Evaluation, Measurement	
					Electives) Required)--- Courses)	Comparison	

Please turn to 25 for Paragraphs 21 and 22.

Paragraphs 21 and 22 Specific courses in the Library Science program are discussed here.

> 7. Which courses were most highly rated? When considering the scores of groups of courses the most obvious pattern was the high ratings given to courses dealing with library service to children and young people in school and public libraries. The seven courses in this category were offered twenty-five times for an average score of 88.5 per cent, eight points higher than the over-all average. Also, special types of library service, such as medical, law, special, college, etc., were unusually well represented among the top twenty-five courses. It is possible that the somewhat more favorable ratings given school and children's librarianship courses were related to the similarly favorable ratings given in summer quarters, since during summer quarters the percentage of students and of courses in school and children's librarianship is relatively high.
>
> For single courses, the highest score for a required course rated more than ten times was for "Basic Reference Materials" with a mean score of 86 per cent. The lowest mean score for such a course was the 74 per cent received by "Library in Society," a required course on the history and sociology of libraries.

List any new concepts that you would index and then turn to 26.

Paragraphs 21 and 22. The courses referred to here seem to represent a degree of specificity beyond the point of practicability for indexing in the system.

There is one new concept in Paragraph 23 that may be considered for a candidate term.

> 8. Is there any relationship between class size and ratings? Although class size was not a significant factor in the ratings at Brooklyn 11 and Colorado, 12 small classes at Drexel were rated more favorably than large ones, as Tables 7 and 8 show. The average class size at Drexel was twenty, but the average class size for the highest twenty-five ratings was only 14.2. It should be noted, however, that the average class size for the twenty-five lowest courses — 18.76 — was also somewhat lower than the over-all average. The mean score for classes having ten or fewer students was 86 per cent, compared to the over-all average of 81 per cent. While small classes comprised only 10 per cent of all ratings, they made up 40 per cent of the twenty-five highest ratings. Furthermore, of all small classes, more than half received scores of 90 per cent or above.

When you have listed your term, turn to 27.

Paragraph 23. The only new term here is "Class size." If you have not already written this term on your form do so now.

1	2	3	4	5	6	7	8
	Educational Establishment (or part of)		Attributes or Actions (of terms in any column)				
Class----------	----------		size				

Paragraph 24. The last paragraph of the document contains nothing new.

> Library science instructors are faced with many teaching problems. In addition to the fact — mentioned earlier — that many of them have had little or no training in teaching methods, they must teach classes made up of students with widely varying backgrounds, library experiences, and goals in librarianship. Furthermore, there is the constant problem of achieving a happy balance between theory and practice. Add to this the lack of adequate textbooks and it seems clear that the task facing the library science instructor is not an easy one. At Drexel it is felt that the student rating program is an important method of helping the instructor do an effective job. While ways of improving the rating sheets are constantly being sought the program itself has proven successful.

The concept indexing of this article is now complete. Please turn to 28 and compare your list of candidate terms with ours.

Candidate Terms for "Library School Instructor Evaluation."

2	3	4	5	6	7	8
Educational Establishment (or part of)	Person Studied	Attributes or Actions (of terms in any column)	Curriculum	Teaching and Learning Methods and Administration	Testing, Evaluation Measurement	Agents or Means (of Col. 7)
			Library Sci.			
	Instructor				Evaluation	
	(Faculty)				Ratings	Graduate students
		Improvement		Teaching Methods		
	Student	Reactions				
	Student	Participation				
School				Administration		
		Effective		Teaching Summer Schools		
	Men Instructors; Women Instructors (Sex)				Comparison	
	Part-time Instructors					
	Instructor	Characteristics				
				Electives; Required courses	Comparison	
Class		Size				

Identifiers: Drexal Institute of Technology

NOW IT IS TIME TO CONSULT THE ERIC THESAURUS AND TRANSLATE THESE CANDIDATE TERMS INTO ERIC LANGUAGE.

Look up the first term in "library Science," in ERICT, and write down its translation. When you have done so, turn to 29.

LIBRARY SCIENCE is the correct translation, since this is a term approved for the ERIC system and included in ERICT.

Now look up your second concept: "Instructor (faculty) evaluation." When you have a translation turn to 30.

"Instructor evaluation" translates as TEACHER EVALUATION.

ERICT has a reference from "Instructors" to TEACHERS. The pre-coordinated terms beginning with TEACHER include TEACHER EVALUATION. Despite the fact that there is no cross-reference, there is also a term FACULTY EVALUATION. It is difficult to see how these differ. On the assumption that the latter implies a corporate idea, rather than evaluation of individuals, we choose TEACHER EVALUATION.

Now we must translate "(Faculty) Ratings by Graduate Students." When you have done this turn to 31.

GRADUATE STUDENTS is the only ERIC term we need, since "Faculty ratings" is a concept already covered by the term TEACHER EVALUATION.

Now look for a translation of "Improvement of teaching methods," and then turn to 32.

TEACHER IMPROVEMENT is a good translation that is reached by checking the NT's under IMPROVEMENT in ERICT.

Now let us translate two candidate terms. Look for translations of "Student reactions" and "Student participation," and then turn to 33.

STUDENT REACTION and STUDENT PARTICIPATION are both approved terms in ERICT and present no difficulty.

Now try the next term, "School administration," and then turn to 34.

ERICT has this term but although, once again, there is no cross-reference, it also has COLLEGE ADMINISTRATION. Since the distinction is made we should use COLLEGE ADMINISTRATION.

Now try the next two terms, "Effective testing" and "Summer schools" and then turn to 35.

Both terms are included in ERICT in the form we have used already: EFFECTIVE TEACHING and SUMMER SCHOOLS.

Now try the next candidate term: "Comparison between men and women instructors," and turn to 36.

There are no directly useful entries under comparison or instructors, but our note to check the term "Sex" proves useful, since ERICT has the term SEX DIFFERENCES.

Now look for translations of the next two terms: "Part-time instructors" and "Instructor characteristics," and then turn to 37.

PART-TIME TEACHERS and TEACHER CHARACTERISTICS are translations that the references in ERICT make easy.

Now try "Comparison between elective and required courses," and then turn to 38.

There is no single term that could translate this concept, and we shall have to use a group of terms instead. The most useful will be ELECTIVE SUBJECTS, CORE COURSES and COMPARATIVE ANALYSIS.

Finally, look for a translation of the candidate term "Class size" and then turn to 39.

CLASS SIZE appears as an approved tern in ERICT so we may use it as it stands.

You should now have the following list of candidate terms:

LIBRARY SCIENCE
TEACHER EVALUATION
GRADUATE STUDENTS
TEACHER IMPROVEMENT
STUDENT REACTION
STUDENT PARTICIPATION
COLLEGE ADMINISTRATION
EFFECTIVE TEACHING
SUMMER SCHOOLS
SEX DIFFERENCES
PART-TIME TEACHERS
TEACHER CHARACTERISTICS
ELECTIVE SUBJECTS
CORE COURSES
COMPARATIVE ANALYSIS
CLASS SIZE

Our final task is to select the major terms. Please turn to 40.

Major Terms. In our demonstration document we suggested that a good way to arrive at major terms is from a summarization of the document.

Write your summarization and then turn to 41.

This article may be summarized as:

Evaluation of library science teachers by graduate students.

Select your major terms from this phrase and then compare your list with ours on 42.

Our summary of the article was:

Evaluation of Library Science Teachers by Graduate Students.

The terms from ERICT that we have selected to represent these concepts are:

1. TEACHER EVALUATION*
2. LIBRARY SCIENCE*
3. GRADUATE STUDENTS*

This leaves room for two more terms, but there are no other concepts sufficiently important to this document to justify marking as major terms.

This concludes the indexing of Exercise No. 1.

Read the document "Fusion Concept in class oom teaching" and then turn to 43 for Exercise 2.

Indexing Exercise No. 2 Gottesman, A. M. Fusion Concept in Classroom Teaching. Nashville, Tenn., George Peabody College for Teachers, 1963.

Kind of Document. Although it does not qualify for the description "Research review," this article does rely heavily on previous work. In the extent that summaries or quotations are relevant to this account of the Fusion concept, they will provide appropriate indexing terms.

Title. Fusion Concept in Classroom Teaching.

This title gives us two obvious concepts. List your first two candidate terms on the form, then turn to 44 for a comparison.

The title gives us two concepts: the "Fusion concept" and "Classroom" (as environment of teaching). These should be listed as follows:

1	2	3	4	5	6	7	8
	Educational Establishment (or part of)		Attributes or actions (of terms in any column)		Teaching and Learning Methods and Administration		

Fusion Concept

Classroom -------Environment

Turn to 45 for a discussion of Chapter 1. Section 1 of the document.

Chapter 1. Section 1. The first paragraph is a highly condensed statement containing a number of possible indexing terms. It is pretty safe to assume, however, that the significant ones will become obvious in the more extended discussion later in the article.

The rest of the Section introduces the idea of similarity between industrial and classroom organization. We are not interested in industrial organization for its own sake, but only insofar as it throws light on classroom organization.

> THE EVALUATION of classroom teaching is a pressing concern of education. In what way can the measure of effective classroom teaching improve education? Identification of means of assessing the effectiveness of teaching would open the way for improving the preservice and inservice education of teachers. Only through education of teachers can classroom teaching be improved. Studies of industrial and business organizations give an important clue toward the means of assessing classroom teaching.
>
> Industrial and business organizations usually manufacture or sell products, or provide services. Virtually every phase of production, service, or sales involves employees. If employees function with increasing effectiveness, then production or service costs decrease or sales increase. Appraisal of effectiveness can be measured with reference to these specific factors.
>
> What contributes to the effective performance of employees? Studies of organizations (1, 2, 3) have revealed that effective performance results when:
>
> - Employees feel some sense of job security.
> - Employees have opportunities to advance in the company.
> - Employees feel that profits and salaries are distributed fairly.
>
> There are but a few examples of how organizations meet felt needs of employees. When organizations recognize and meet felt needs, employees function more effectively. If there are similarities between industrial organizations and classroom organizations, then theories of industrial organizations can be applied to the study of effective classroom teaching. A new and different approach may be promising.

What candidate term covers the concept represented in the whole of the section? Please turn to 46 after you have written it down.

As our third candidate term, we use "Organization," since we are not interested in industrial organization for its own sake (but only insofar as it throws light on classroom organizations).

1	2	3	4	5	6	7	8
					Teaching and Learning Methods and Administration		
					Organization		

Chapter 1. Section 2.

THE CLASSROOM AS AN ORGANIZATION

Broad differences exist between classrooms and factories, but both can be considered "organizations." All organizations tend to function effectively or they begin to disintegrate. The same human errors that cause a factory to fail could cause a classroom program to fail. Recognizing and meeting individual needs is as critical a factor in the classroom as it is on the assembly line.

The same examples used to describe needs of employees can be applied to pupils. For effective performance —

Employees must:	Pupils must:
. Feel some sense of job security	. Feel they can master the subject and receive passing grades
. Have opportunities to advance in the company	. Have opportunities to receive recognition for about average performance
. Feel profits and salaries are distributed fairly	. Feel grades and other rewards are given fairly

This section compares employees' needs with pupils' needs. As in the previous section, we need only index by terms referring to education. Write the candidate term(s) on your form, then turn to 47.

Chapter 1. Section 2. Our fourth candidate term will be "pupils' needs," since we are using only educational terms in indexing this document.

1	2	3	4	5	6	7	8
	Person Studied	Attributes or Actions (of terms in any column)					
	Pupils	Needs					

A new concept is introduced in Section 3.

BACKGROUND ON INDUSTRIAL RESEARCH

For a number of years industrial organizations, hospitals, and banks have been studied by the Yale University Labor and Management Center. Two pioneers in organizational research associated with this center are E. Wight Bakke and Chris Argyris (2, 3, 4, 5, 6). They have assumed that both an organization and the members of an organization need to fulfill goals.

The goals of the organization may or may not be compatible with those of its members. For example, a particular plant may have the goal of increased production per worker to reduce costs. Individual workers may strive to decrease production as a means of preventing layoffs. The point is not so much a matter of reasonable or "correct" needs or goals but rather the perceptions of the individuals as to needs or goals.

In studying organizations, Bakke and Argyris have discovered that an organization makes demands upon its members. Similarly, the individual member seeks a working environment in which his needs are met. The needs may conflict or they may fuse. When an individual's perceived needs and organizational goals are in harmony, a high degree of fusion exists. To the extent that they conflict a low or negative fusion exists.

When you have listed the concept introduced in this section, turn to 48.

Chapter 1. Section 3. This section introduces one new concept: "Goals," which we must list in the attribute or action column of our form.

1	2	3	4	5	6	7	8
			Attributes or Actions (of terms in any column)				
			Goals				

Section 4. This describes the Fusion concept but does not provide us with further indexing terms.

Please turn to 49 for Section 5 of Chapter 1.

Chapter 1. Section 5.

APPLYING THE FUSION CONCEPT TO THE CLASSROOM

The curriculum is the means by which educational purposes are reached. Curriculum should result in the maximum development and educational growth of children as individuals, as social beings, and as citizens in a democracy. Thus, the needs and interests of children and of society must be the basis for the curriculum. Classroom programs succeed or fail to the degree that they meet those needs and interests. The part of the classroom program which meets pupil needs and interests is promoting the self-actualization or self-fulfillment process. Quite simply, the self-fulfillment process takes the immature, dependent, ego-centric child and helps him develop away from infancy.

Basic trends in the process of self-fulfillment have been postulated by Bakke and Argyris (6). They maintain that all people in our culture tend to move from:

- A passive to an active state; from a state where their actions are initiated by others to a state where they initiate action
- The ability to behave in only a few ways and in a rigid manner to the ability of behaving in many different ways and in a complex manner
- The state of being in a subordinate position to a more equal or superordinate position
- A state of being highly dependent upon others to a state of independence and finally interdependence
- A state of receiving and incorporating aspects of culture to a state of controlling, redefining, using, and helping others incorporate these aspects of culture.

Byrnes and Mullen (7) used the preceding trends to discover the preferences of administrators, teachers, and pupils in a school system. Interview techniques, which had been used in studies of industrial organizations, were utilized. Their investigation identified the following pupil preferences:

Continued on 50.

(from page 49)

1. Social-contact-seeking
2. Variety-seeking
3. Activities-minded
4. Independence-seeking
5. Vocation-minded
6. College-oriented
7. Marks-oriented
8. Fair-control-seeking
9. Leader-opportunity-seeking
10. School-work-rejecting
11. Humor-seeking
12. School-accepting
13. Self-expression-seeking
14. Help-seeking
15. Dependence-seeking
16. Participation-minded
17. Recognition-seeking
18. Failure-avoiding
19. Challenge-accepting
20. Success-seeking
21. Sociable-"A"-student accepting
22. School-rejecting
23. Academic-minded
24. Motivation-seeking
25. Service-rendering
26. Routing-seeking

When you have listed any new concepts you find in this section, turn to 51.

Chapter 1, Section 5. The first part of Section 5 deals with self-actualization (self-fulfillment) of students. The second part deals with pupil preferences. Although these preferences are quoted from a previous investigation they are also important for this document. The following candidate terms should appear on your form.

1	2	3	4	5	6	7	8
		Person Studied	Attributes or Actions (of terms in any column)				
		Students	Self-actualization (Self-fulfillment)				
		Pupil	Preferences				

Chapter 1. Section 6 is too long to reproduce on one page. Please read this section in your copy of the document (pages 5 thru 8).

When you have listed any new concepts for indexing, turn to 52.

Chapter 1. Section 6 describes briefly seven processes of organization. It is doubtful whether (a) these are useful indexing terms in an educational system (b) there is enough information to make indexing worthwhile. This is a good example of circumstances in which the containing term "organization" (previously recorded) may be used to stand for the parts.

Section 7.

A STUDY OF PUPIL PREFERENCES AND SATISFACTIONS

The investigation of pupil preferences and pupil satisfactions is a first step toward the application of the fusion theory. This dimension of the fusion process was investigated in a recent doctoral dissertation at George Peabody College for Teachers (9). The purpose of the study was to determine the relationship between teacher responses to questions from the Ryans "Characteristics of Teachers" study (11), and the degree to which teachers, as they attempt to fulfill the goals of the school organization, establish classroom situations which take into account the needs of pupils. The study, which forms the basis for this publication, is reported further in Chapter Two.

Several limitations of this study are evident. An untested assumption was made that the teachers involved were attempting to reach the goals of the school. Teachers, of course, have personal needs and goals which may conflict with those of the school. If these personal needs and goals interfere to any great extent, pupils are less than satisfied in realizing their preferences.

Continued on 53.

(from page 52)

In this study, pupil preferences are regarded as felt needs. These preferences may be different from the actual needs of pupils — possibly a contrast between artificial and real needs. The school strives to meet the real needs of pupils. If pupils have needs which are dissimilar and not satisfied, learning may suffer. For example, pupil learning is an essential goal of the classroom. For pupils who seek knowledge, the goals of the classroom and of the pupils coincide or fuse. However, numerous other needs and preferences exist for pupils. The need and preference for social contact is high on the list, according to Coleman (8) and Byrnes and Mullen (7). The classroom which provides for social contacts as it provides learning experiences is more effective than one which does not.

This chapter has been concerned with an explanation of the fusion concept, the statement of assumption or hypotheses from previous studies, and an attempt at minimizing the problems of semantics. The details of the fusion instrument and its development are pursued in Chapter Two.

There is only one new concept in this section. When you have made your decision, turn to 54.

Chapter 1. Section 7. The only new concept is "Pupil satisfactions." This seems to be close to the idea of self-fulfillment, but we may record this new term and make the final decision when consulting ERICT.

1	2	3	4	5	6	7	8
		Person Studied	Attributes or Actions (of terms in any column)				
		Pupil---	Satisfactions				

Chapter 2. Sections 1 to 4 are too lengthy to reproduce here, so look at your own copy, pages 9 thru 12.

These paragraphs refer to the design of a questionnaire. The appendices to the document give further details. What will your 9th candidate term be? After you've decided, go to 55.

Chapter 2. Sections 1 to 4. The candidate term here would be "Questionnaire."

1	2	3	4	5	6	7	8
							Agent or Means (of Col. 7)
							Questionnaire

Sections 5 and 6. Please read these sections in your copy of the document (pages 12 thru 14).

When you have listed your candidate terms, turn to 56.

Chapter 2. Sections 5 and 6. The main concern of these sections is with the "Reliability and Validity of the Measuring Instrument." These ideas may be recorded as follows:

1	2	3	4	5	6	7	8
			Attributes or Actions (of terms in any column)		Teaching and Learning Methods and Administration	Testing, Evaluation Measurement	Agent or Means (of Col. 7)
			Reliability) Validity)	----------	----------	Measuremt.	--Instrument

Section 5 also introduces the concept of "Effective Teaching," and Section 6 the concept of "Teacher Characteristics."

1	2	3	4	5	6	7	8
		Person Studied	Attributes or Actions (of terms in any column)		Teaching and Learning Methods and Administration		
		Teacher--	Characteristics				
			Effective	----------	Teaching		

"Peabody Demonstration School" and "Rutherford Central High School" may be added as identifiers.

Chapter 3. Sections 1 to 3. Please read these sections on pages 15 and 16 of the document. List any concepts you find, then turn to 57.

Chapter 3. Sections 1 to 3. These sections refer to "Preservice and Inservice Education of Teachers," which we list on our form as follows:

1	2	3	4	5	6	7	8
					Teaching and Learning Methods and Administration		
		Person Studied					
		Teacher			Preservice Education		
		Teacher			Inservice Education		

Section 4. Refers to further research needed, and does not provide information for indexing. While it is possible that someone may be interested in research needed, such information is likely to be quickly out of date, and therefore is not suitable for permanent recording in the ERIC system.

Section 5. The summary adds nothing new, but confirms most of the terms we have recorded.

Now take a look at the references on page 19. References attached to articles are often useful as a check on candidate terms listed, or even as a source for new terms. For example, this list has two titles which include the term "fusion." Any significant list of references should be recorded as a bibliography. But remember that this is a form description and not a subject of the document.

This completes the concept indexing stage. For the complete list of candidate terms, turn to 58.

Candidate terms for "The Fusion Concept in Classroom Teaching"

2	3	4	5	6	7	8
Educational Establishment (or part of)	Person Studied	Attributes or Actions (of terms in any column)	Curriculum	Teaching and Learning Methods and Administration	Testing, Evaluation Measurement	Agents or Means (of Col. 7)
				"Fusion Concept"		
Classroom		Environment		Organization		
	Pupils	Needs Goals				
	Students	Self-actualization (self-fulfillment)				
	Pupil	Preferences				
	Pupil	Satisfactions				
		Reliability) Validity)			Measurement	Questionnaire Instrument
		Effective		Teaching		
	Teacher	Characteristics				
				Preservice Education		
	Teacher			Inservice Education		

Identifiers

Peabody Demonstration School

Rutherford Central High School, Murfreesboro, Tennessee

Consult ERICT and translate the first term, "Fusion Concept".

Then turn to page 59.

The first term, "Fusion concept," is not in the ERICT.

This is obviously a fairly new term from the study of management theory. After the regular justification procedure it should be recommended as a new term for ERICT.

Now find translations for the next two terms: "Classroom environment" and "Organization." Then turn to 60.

CLASSROOM ENVIRONMENT and ORGANIZATION are in the ERICT as approved terms and can be used as they stand.

Now translate the next two candidate terms in the list: "Pupils' needs" and "Goals." Then turn to 61.

OBJECTIVES is the term that ERICT prefers to "Goals" and there is a reference to it in the thesaurus.

"Pupils' needs" is not in the thesaurus, but a reference directs you generally from PUPILS to STUDENT, and you can then easily find the term you want: STUDENT NEEDS.

Now translate the next candidate term: "Students' Self-fulfillment (self actualization)." Then turn to 62.

The term "Self-actualization" appears in ERICT, but with a scope note giving a definition different from that required here. There are many terms beginning with Student but none is synonymous with fulfillment. We should suggest for ERICT the addition of "Student fulfillment."

Now try "Pupil preferences," our next candidate term. Then turn to 63.

Again, there is no precise equivalent of this under STUDENT. However, STUDENT INTERESTS appears to be very close and we may select this. We should also recommend that a reference from "Student preferences" be included in ERICT.

While we are discussing this point we should note that the next candidate term, "Pupil satisfactions" does not really need translating at all. Since we have just had to add "Student fulfillment," it is probably most satisfactory if we make a reference: "Student satisfactions" use STUDENT FULFILLMENT.

Now find a translation for "Questionnaire" and turn to 64.

The term QUESTIONNAIRE is listed in ERICT, so you may use it as it stands.

Now translate "Reliability and Validity of Measurement Instrument," and then turn to 65.

MEASUREMENT INSTRUMENTS is listed in ERICT, but neither "Validity" nor "Reliability" appears. There is an entry for TEST VALIDITY which we could use and recommend inclusion of a reference from "Validity." We should also recommend the addition of "Test Reliability," since validity and reliability have different meanings. A reference should be added from "Reliability."

Now translate "Effective teaching" and "Teacher characteristics" and turn to 66.

EFFECTIVE TEACHING and TEACHER CHARACTERISTICS are both terms in ERICT, and we may use them in this form.

Now try "Teacher Preservice Education and Inservice Education" and turn to 67.

Neither of these candidate terms appears in exactly the same form in ERICT. But the approved versions are very close and easy to find. They are

PRESERVICE EDUCATION

and

INSERVICE TEACHER EDUCATION.

Now turn to 68 for a complete list of translated terms.

Translation

FUSION CONCEPT (recommended for addition to ERICT)
CLASSROOM ENVIRONMENT
ORGANIZATION
STUDENT NEEDS
OBJECTIVES
STUDENT FULFILLMENT (recommended for addition)
STUDENT INTERESTS
QUESTIONNAIRES
MEASUREMENT INSTRUMENTS
TEST VALIDITY (with recommendation to add reference from "Validity")
TEST RELIABILITY (recommended for addition, with reference from "Reliability")
EFFECTIVE TEACHING
TEACHER CHARACTERISTICS
PRESERVICE EDUCATION
INSERVICE TEACHER EDUCATION

Major Terms. The first step is to summarize the document. When you have done that, turn to 69.

We have summarized the document as follows:

A study of effective classroom teaching through the Fusion concept.

Now list the terms that you will mark as major and turn to 70.

From our list of translated terms, then, we have selected the following as major terms:

1. FUSION CONCEPT*
2. CLASSROOM ENVIRONMENT*
3. EFFECTIVE TEACHING*

This completes our indexing of Exercise Number 2.

The last two lessons of this course have dealt with most of the common problems of indexing, but sooner or later you will come acro s others. We hope that the principles laid down in Lessons 1 and 2, and the approach demonstrated in Lessons 3 and 4 will guide you in their solution. In the introductory volume we have provided an index to facilitate later reference to the main themes of the course, and a selected list of books and articles for further reading.